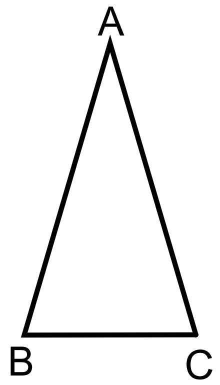
Triangles

1. Cut a triangle out of a piece of paper.
2. Use your pencil to shade the three angles.
3. Cut the angles out from the triangle.
4. Put the three shaded points on the triangle together.
5. What conclusion can you make about the sum of the angles in a triangle?
6. Compare to your neighbor. Did they do the experiment the right way? If so, what did they get?

Triangles

The sum of the angles in any triangle is equal to two right angles (180^{o}). Why this isn't a postulate I don't know, but it is Proposition 17 in Book I of "Elements".



1. Extend BC to D (Pos. 2)
2. Construct Segment CE || Segment AB

2a. Line AC is "transversal" to AB and CE, therefore:

3. $\angle$BAC = $\angle$ACE and $\angle$ABC = $\angle$ECD(Pos. 5)
4. Adding $\angle$ACB, we get that:

   $\angle ABC + \angle BCA + \angle BAC = \angle BCA + \angle ACE + \angle ECD$
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6. Therefore, $\angle ABC + \angle BCA + \angle BAC = 180^{o}$ also

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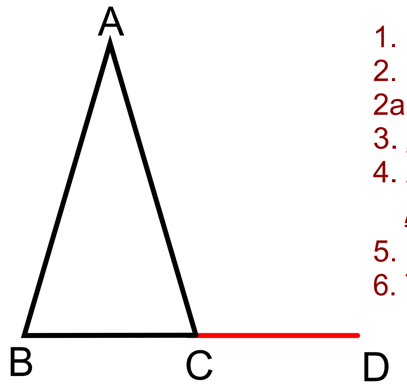

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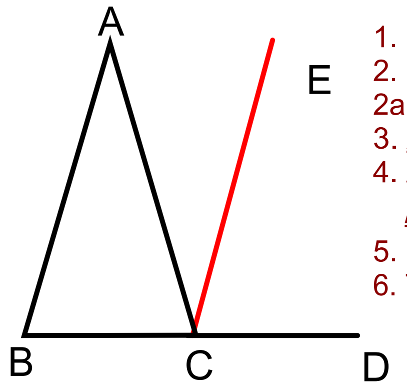

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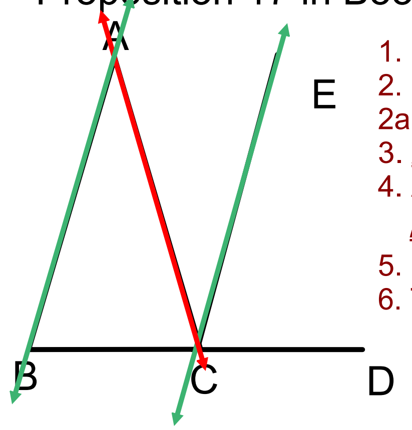

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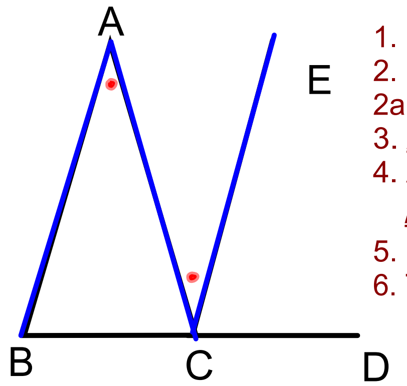

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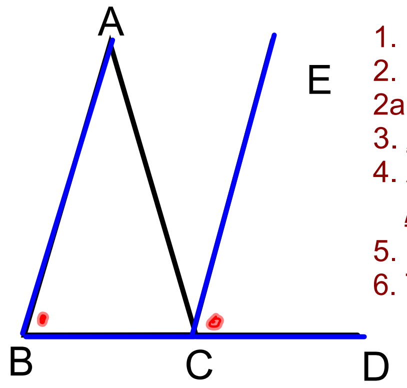

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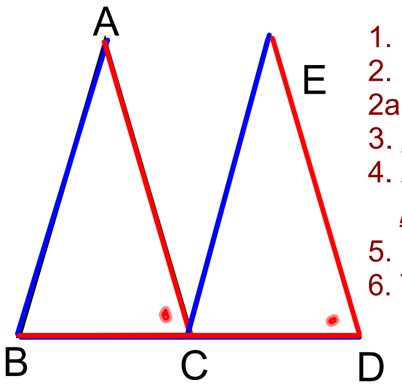

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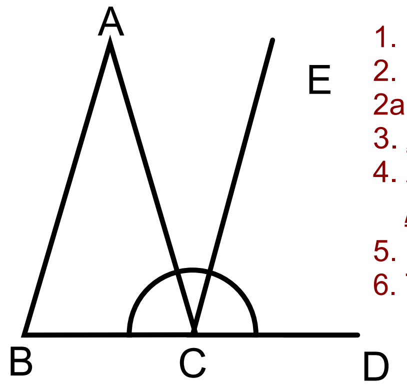

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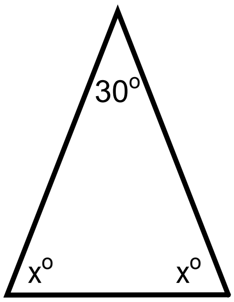
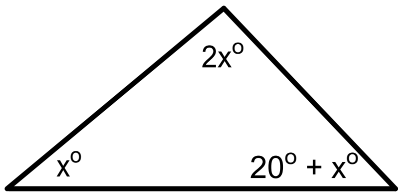
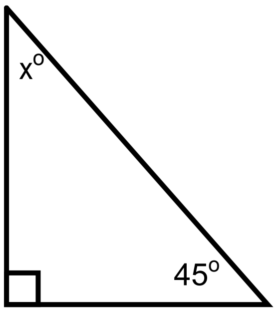
Q.E.D. = Quod Erat Demonstrandum
(Latin for: "Which was to be demonstrated")

Triangles

Since we know the sum of the angles in a triangle are 180^o, find the missing angle in each of the following:







Triangles

In a triangle, angle A is 2/3 the size of angle B; and angle B is three times as big as angle C. What is the sum of the angles?

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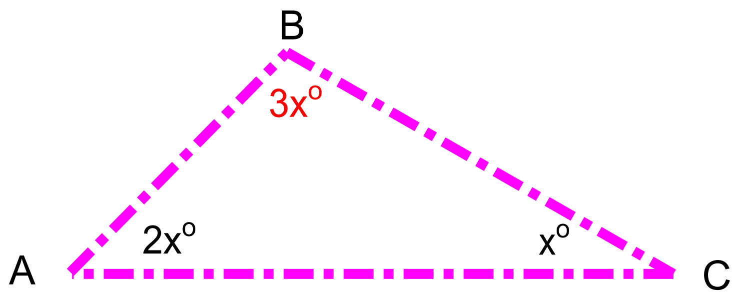
HINT: Make angle B a multiple of the denominator, 3.



Triangles

$x^o + 2x^o + 3x^o = 180^o$

$6x^o = 180^o$

$x^o = 180^o \div 6$

$x^o = 30^0$